

**THE EVALUATION OF FIRE DEPARTMENT RENTAL INSPECTIONS IN
NILES, MICHIGAN: ARE THEY EFFECTIVE IN THE PREVENTION OF
RESIDENTAL FIRES**

Leading Community Risk Reduction

BY: Larry D. Lamb, Chief
Niles Fire Department
Niles, Michigan

An applied research project submitted to the National Fire Academy
as a part of the Executive Fire Officer Program

October 2004

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed:_____

ABSTRACT

Though the Niles Fire Department has conducted a rental property inspection program for many years, the programs effectiveness in prevention of fire has never been identified.

The purpose of the study was to evaluate the benefits of the program in relationship to residential fires within the City of Niles. An evaluative research method was used to answer several questions. First, are rental property inspections being performed consistently with accepted national practices? Next, in order to better understand what strategies might be effective, we must first learn what are the leading causes of fires in residential properties in the United States as well as in Niles? What types of violations have the inspectors found and cited in these properties during inspections? Finally, are there any additional benefits derived from the program that may be unrelated to the prevention of fire?

The procedures used to complete this research included a review of fire service literature, fire and building department records, and an opinion study issued to Niles inspectors. The results of this research displayed many positive aspects of the program, benefits derived, and suggested areas for improvement.

Recommendations included the inclusion of inspection requirements on the Niles City Web Site, increased training for inspectors, and more focus on prevention education during inspections.

TABLE OF CONTENTS

Abstract.....	3
Table of Contents.....	4
Introduction.....	5
Background and Significance.....	6
Literature Review.....	10
Procedures.....	18
Results.....	21
Figure 1...1983 Niles Fire Causes.....	23
Figure 2...1988 Niles Fire Causes.....	24
Figure 3...2003 Niles Fire Causes.....	25
Figure 4...Niles Inspection – 2003 Fire Prevention Related Violations..	27
Discussion.....	29
Recommendations.....	34
References.....	36
Appendix A...Niles Fire Inspector Opinion Survey.....	39

INTRODUCTION

The City of Niles is home to 12,204 residents (United States Census Bureau, 2000), who occupy roughly five square miles in southwestern lower Michigan. Niles is an older community that has seen many of its neighborhoods converted from single-family owner occupied to multi-family rental uses. Many of the owners of these rental properties did not reside close enough to Niles to properly maintain their structures. Many Tenants either did not feel the responsibility or have the means to repair their buildings. Over time the housing stock began to show signs of wear and other signs of neighborhood decline.

The Niles Fire Department (NFD) was tasked with the implementation and operation of a Rental Inspection Program to attempt to curb these trends. The Fire Marshal was put in charge of the program and eventually given one member of each shift to assist him in the inspection of over 2000 rental units annually. The Problem is the NFD does not know if this rental dwelling inspection program that they have operated for the past 15 years has been effective in reducing dwelling fire occurrences. This lack of understanding limits the justification to decision makers of increased staffing for the program. It also limits the ability of the programs management to make educated decisions that may increase the performance of the program. The purpose of this project was to attempt to gauge the effectiveness of the program in preventing or reducing loss from residential fires in the City of Niles.

The research would follow an evaluative method and attempt to find the answers to the following questions. First, are rental property inspections being performed consistently with accepted national practices? Next, in order to better understand what strategies might be effective, we must first learn what are the

leading causes of fires in residential properties in the United States as well as in Niles? What types of violations have the inspectors found and cited in these properties during inspections? Finally, are there any additional benefits derived from the program that may be unrelated to the prevention of fire?

BACKGROUND & SIGNIFICANCE

The City of Niles is a small city of 12,204 residents (2000 Census) located along the Saint Joseph River in southwestern lower Michigan. The community was first colonized as a trading post in the late 1600's. With this historic tenure, the City was on the forefront during the turn of the 20th century when industrial growth boomed throughout the country. This boom brought several large companies to Niles where they built large factories along the Saint Joseph River that dissects the community. These large factories supplied good paying jobs to workers, who in turn, built neighborhoods of large wood frame Victorian homes (Mumford, 1998).

These homes were immense, with 12-foot ceilings and several thousand square feet of living space. This was a time when homes included additional living space designed for parlors and servants quarters. Over the years, as roads and cars became more reliable, and ranch homes and country living more vogue, the city center became a less desirable place to live. This exodus led enterprising building owners to subdivide these mammoth properties and turn these once single-family homes into multi-family rental property. This trend continued until whole neighborhoods were transformed from upper middle class to areas where the mean of the community is below the poverty line.

In May of 1987, City Officials faced with the problem of absentee landlords and tenants who had little regard for the maintenance of their dwelling, passed a local ordinance to initiate a program to inspect these properties and make sure that they were properly maintained. These properties were being used for commercial means thus subjecting them to governmental oversight.

The job of performing these inspections was given to the Fire Marshal who worked out of the fire department. The NFD was a combination department with 20 on-call firefighters and 12 full time firefighters covering 3 shifts, a chief, and the Fire Marshal. The building department was also involved in the program. An administrative assistant from the building department was tasked with registering rental property through a mass mailing campaign backed up by telephone contact. As the properties were registered the assistant would schedule the properties for inspection.

To help the Fire Marshal with this new function, the City Council adopted a model property maintenance code. The Fire Marshal was also given training to the National Fire Protection Association (NFPA) Fire Inspector 1 level and authorized to issue misdemeanor citations for violations relating to the new program. These inspections included exterior property areas, common areas as well as each individual living unit. Inspection reports were developed to allow the Fire Marshal to note all of the items that needed correction. Reports included a copy to issue the tenant or landlord after the inspection. These reports were filed by the assistant and maintained in the property maintenance file in the building department.

In 1994, The NFD Chief felt that the Fire Marshal required assistance in performing the rental property inspections. To meet this need, he offered part time employment to each of the three lowest ranking shift members on their off-duty days. These individuals would perform rental inspections as well as general property maintenance. They were paid eight dollars per hour working roughly eight to sixteen hours extra per week.

This arrangement lasted until 1997 when the union argued that a Fair Labor Standard violation had been occurring. In response, the Chief stopped the part-time inspection program and ordered that the same individuals perform the inspections during their regular twenty-four hour shift. These Deputy Code Enforcement Officers would perform code enforcement functions from eight to five, returning to the station for the remainder of the shift. The union did not fight this new change, as the individuals who were most effected were glad to get the time off.

It is in this configuration that the rental inspection program has remained to the current date. Since that time all of the former personnel have either retired or promoted to other positions within the department. The current inspection staff had all hired in with the understanding that inspections and other code enforcement would be performed Monday through Friday when they were working on the suppression crew. During this time they would respond to fires and other calls whether they were conducting an inspection or not.

Though the program is believed to be effectively reducing fires in our community the need for quantification is very important. In the State of Michigan, local municipalities receive funding from the state based on the amount of sales

tax collected. During each of the past three years, due to the poor economic performance, this funding has been reduced several times. This shortfall has hurt the City's ability to fund all of its programs. This competition for resources means that each department must now prove value with every program or risk its elimination.

Prior to the fire department performing inspection services each shift had been steadily reduced from its original eleven members to its current staffing of four personnel daily. The once all career department was transformed into a combination unit as on-call firefighters were hired and trained. Since the establishment of the inspection program staffing has stayed the same. Without documented success and benefit to the community, the fire department could lose the program with the possible reduction in duty personnel sure to follow. Since inspection personnel also serve a first alarm suppression role, the department's ability to provide adequate scene staffing could be in jeopardy.

The effectiveness of the Niles rental inspection program is directly linked to goals of the National Fire Academy's Executive Fire Officer Program course entitled, "Leading Community Risk Reduction". This curriculum discusses the need to develop leaders in "multi-hazard community risk –reduction." This process is described as the integration of several aspects, including but not limited to, emergency response, code enforcement, legislative processes to adopt codes, standards, and prevention related ordinances (United States Fire Administration, 2003).

With most fires occurring in one and two family homes, study is warranted in programs that allow fire department inspection personnel access into these

occupancies (Cote, 2004). “In 2001, more people died in one and two family dwelling fires than died in the twin towers on September 11th of that same year” (Cote, 2004, p. 69). Documentation of successful programs could give other departments the justification needed to go forward with inspection programs of their own.

Finally, this project applies to all five of the goals established by the United States Fire Administration. Its association with safety in the home touches both the old and young. It reduces firefighters injuries through the reduction of fires. And finally since it proposes to have firefighters conduct inspections, it promotes a multi-hazard reduction plan lead by fire personnel.

LITERATURE REVIEW

Residential Fire Inspection Programs are not new. Lieutenant Martin reported on five departments that were performing these inspections back in 1990. All five reported felt that their program was having an impact on fire occurrence in their communities (Martin, 1990). He reported that these inspections, though voluntary, allowed firefighters to discuss many important fire safety benefits as they performed inspections.

Using shift personnel to perform inspection services is not a new one. NFPA 1201 reports that the responsibility of fire inspection has grown past the point that can be easily managed by a few specialized fire prevention personnel. The document cites the use of fire companies for fire prevention inspections has given departments the capability to provide an acceptable level of safety for the area, which they respond (National Fire Protection Association [NFPA] 2000).

Advantages reported include increased productivity, risk familiarization, and increased contact with the community (NFPA, 2000). These inspections help familiarize responders with buildings that may later respond to (Farr & Sawyer, 2003). Regular training for inspection personnel and fire companies tasked with fire inspections should also be conducted to ensure that inspection staff and fire companies perform consistently with local codes and departmental policy (NFPA, 2000). NFPA 1031 goes on to point out the many continuing education training options available to inspection personnel including workshops, seminars, as well as the study of prevention focused journals. Nationally recognized certification is also a valuable way to show that your inspectors are up to the task (NFPA, 2003).

They also recommend a “structured program of scheduled field checks to determine the quality and adequacy of the inspections being performed.” They call for periodic review of all aspects of inspection program delivery, including who is conducting the inspections, when they are being performed, how are the inspections selected and the training used to support those functions (NFPA, 2000). NFPA 1031 points out the need to have “Basic resource materials” so that inspectors can be clear about their task. This material includes codes, standards, and local ordinances as well as department policies and procedures relating to inspections. It is also beneficial for fire and building enforcement personnel to coordinate efforts as many areas of responsibility may overlap. A procedure should also be established at this level that assures fire department involvement in plan review and other building safety issues (NFPA, 2000).

“The inspector must be able to identify the process or equipment, know how and what it is used for, and understand the basic safety principles that apply to it” (IFSTA, 1998, p. 75). One main hazard encountered by fire inspectors in residential occupancies is electricity. Inspectors should be able to discuss the proper use of extension cords, portable heaters, and damaged lighting and appliance cords. The four common causes of electrical fire are old worn electric equipment, improper use of equipment, defective installation, and accidental causes. Other hazards in residential buildings include storage of materials, interior finishes, utilities and appliances, inoperative detection equipment, and inoperative egress components (NFPA, 1994).

Many municipal Rental Inspection Programs are operating in jurisdictions in many states nationally. Fargo, North Dakota uses three full time housing inspectors to inspect their four thousand rental buildings, containing over 21,395 units. These inspections are based on the International Property Maintenance Code, 2003 Edition. Inspectors cited a total of 54,311 violations. They use a strategy of “penalty fees, municipal court action, and more frequent inspections on rental properties which fail to meet minimum code requirements” (Fargo, 2004).

The City of Cedar Rapids requires that all rental housing have a Certificate of Compliance prior to the dwelling being rented out. The State of Iowa requires every city with a population of 15,000 or more to adopt a housing code and perform rental inspections (Cedar Rapids, 2004). They perform these inspections prior to renting and at seven-year increments there after. Their inspectors inspect all parts of the units, including the basement and all common

areas. Fire safety items that are inspected include smoke detector location and operation, extinguishers that are required in each unit, and combustible liquids storage. Additionally, inspectors look for many other home maintenance items that contribute to fire safety in a dwelling including drywall condition, egress components including secondary escape windows, and electrical components (Cedar Rapids, 2004). In 2001, many cities in Kansas perform rental inspections only as a result of a complaint being filed. Kansas City is the only community that has regular inspections of rental housing stock (Salcetti, 2001).

The City of Boulder, Colorado utilizes private contractors to inspect their rental properties on a four-year rotational basis. They require both a general inspection, which includes “exterior, egress, stairways, fire protection, and gas appliances, food preparation and storage, lighting and ventilation, general conditions, and plumbing. To conduct these inspections the inspectors must hold a “D-9 contractor’s license issued by the city to perform the General Inspection or an Electricians License to perform the required electrical inspection. They also call for a licensed mechanical technicians inspection on all fuel burning appliances. All of these inspections are paid by the building owner in addition to a \$45 fee paid to the City for administration costs (Boulder, 2004).

In a report to the City Council of St. Paul, Minnesota, the a policy analyst for the city recommended the adoption of a rental inspection program to assist with the community’s “Chronic Problem Properties.” These properties are defined as “property with which neighbors, neighborhoods and / or the city have struggled over a long period of time, because of property maintenance code violations and possible criminal activity” (Moermond, 1995). She recommended

a phased in approach, which would first require the owners of one and two family rental dwellings to first register, then later to require a full inspections. She states that “this thereby protecting the health and safety of the tenants, and preventing neighborhood deterioration.” A final recommendation supports efforts to include education of both the landlord and the tenant as a sentence for housing violations (Moermond, 1995).

Michigan Cities are also performing these types of inspections. Ypsilanti, Michigan inspects all rental property every two years. They report nearly 65 percent of the community’s housing stock is rental property (Hachem, 2004). Non-fire department personnel are tasked with the performance of these inspections. The use of non-fire personnel can lead to difficulty in understanding the fire and life safety codes purpose (Corbett, Farr, 2004).

The City of Kalamazoo employs nine full time inspectors who are responsible for the inspection of 17,000 registered properties every other year. It is the responsibility of the landlord to assure that the tenant has been notified of the inspection and they understand that they have the right to attend the inspection (Kalamazoo, 2004).

Pontiac authorities have performed an inspection sweep of all of a landlord’s property in response to a fire where that killed a pregnant woman and her five children. In an article in the Tribune Fire Chief Wilbert “Skip” McAdams blasted the Community Development Department for their slow prosecution of housing violations (Low, Witsil, 2003). In 2003, the City’s Community Development Department routinely inspected single-family rental property. Since that time the City has adopted a tougher smoke detector ordinance that requires

installation of single station initially, leading up to eventually a requirement of interconnected hard-wired units. The new ordinance is titled after the names of the family lost in the fire (Low, Witsil, 2003). In 2002, an estimated 20.9 million people live in areas where no inspections take place (United States Fire Administration, Federal Emergency Management Agency, 2002).

The researcher looked at national causes most associated to residential fires in a hope to better understand if rental inspections in the City of Niles could positively reduce these causes. In 1998 in a study released by the American Academy of Pediatrics entitled “reducing the Number of Deaths and Injuries From Residential Fires”, reported that of the 381,500 residential fires reported in 1998, 3250 people were killed and 17,175 people were injured, resulting in 4.4 billion in property loss. Residential fires accounted for 74% of all structure fires, 81 percent of all fire related deaths (Bull, 2000).

Home fires contribute 90 percent of all accidental fire deaths in children less than fifteen years of age (Bull, 2000). Forty percent of all residential fire deaths to children are contributed to fire play (Istre, McCoy, Carlin, McClain, 2002). Preschool age minority children, living in lower income census tracts, had higher rates of residential fire related injuries (Istre, McCoy, Carlin, McClain, 2002). In 2000, 2920 deaths were reported in one and two family dwellings or 72 percent of all residential property loss of life (Bradley, 2003).

This is not a new trend “America Burning” a report published by a federal commission appointed by President Nixon, reported that of the 8,000 lives lost to fire nine out of ten were in residential fires. The report also estimated that departments could limit this toll by 15 – 30 percent with the institution of a home

inspection program. The document points to the educational opportunity presented during the inspection could save thousands of lives annually (National Commission on Fire Prevention and Control, 1973).

The statistics in 2001 were unchanged if you delete the events of September 11th. 3,745 civilians lost their lives, while 17,225 reported injuries were noted. Seventy-six percent or 396,500 of the 521,500 structure fires documented by fire departments in 2001 were in residential properties. 383,500 fires occurred in one and two family dwellings, apartments, and manufactured homes (Cote, 2004). Fifty-seven percent of all reported structure fires occurred in one and two family dwellings, with seventeen percent occurring in apartment dwellings. These properties account for a disproportionate number of fire deaths (Cote, 2004).

In 1999, cooking equipment started twenty-seven percent of home fires, heating equipment was blamed with 14.3 percent, while intentional and electrical distribution came in at 11.4 and 10.8 respectfully. When the numbers are related to fires where civilian deaths are considered, smoking related causes moves to the top with a 25.7 percent. Intentional fires take the second spot with 18.6 percent and heating and cooking each account for 13 percent of the total (Cote, 2004).

Most cooking fires come from unattended cooking using grease or oil ignites and spreads to nearby materials (FEMA, 2001,p. 61). Educating the public about the dangers of unattended cooking and safe methods of grease fire extinguishment can lessen this risk. Additionally, the wearing of loose fitting clothes can lead to injury. In 1998 cooking was the 3rd leading cause of fire

death (FEMA, 2001,p. 61). These findings caused the researcher to include recommendations relating to the need to explore what items Niles inspection personnel had been citing.

Fires relating to heating devices can be broken down into two groups the first group includes space heaters, fireplaces and chimney fires. This group, which spiked nationally in the 1970's and 1980's, has seen consistent reductions in recent years. The second group, which includes central heating, and water heaters, has remained constant over time. The number of heating fires has decreased by fifty percent in the 1990's (FEMA, 2001,p. 62).

Poverty, lack of Education and smoking all correlated with high state death rates (Istre, McCoy, Carlin, McClain, 2002). This led the researcher to seek out fire occurrences and their relationship to areas where lower income families reside. Smoke alarms seemed to be no help in preventing deaths of juvenile fire setters, however they did show a benefit in accidental home fires. Additionally the authors identified that most cases of fatal fire play occurred in the child's bedroom with the bedroom door closed (Istre, McCoy, Carlin, McClain, 2002). The many smoke detectors installed outside the bedroom door may not sound the alarm in time (Istre, McCoy, Carlin, McClain, 2002).

Baum reported in the NFPA journal article in 2002 that, "Even the most ambitious fire and life safety inspection program can't prevent all fires"(Baum, 2002, p. 1). He goes on to explain that even if fires still occur, because of safety education, detection and egress they have found that fires are generally less severe. The Austin, TX fire department uses a system based on risk and frequency of fires to gauge trends in performance. One and two family

residential properties are ranked the number one hazard (Carter, 2004). They have found a reduction in occurrence and severity since focusing on residential properties.

Finally, Carter points out that “participation of fire suppression personnel in fire prevention activities is as necessary as their participation in tactical operations” (Carter, 2004, p. 120). This practice will decrease fires and show good use of personnel and their management. Conducting inspections can also familiarize firefighters with contents and construction hazards (Carter, 2004).

In conclusion, many sources were utilized to determine the way in which other municipal governments are inspecting rental property. The researcher also was able to determine from sources many aspects of what is considered to be acceptable practices in performance of such inspections. Additional information was gathered in order to learn first what caused fires, who got injured, and in what buildings. This allowed the author to compare data found locally, in order to determine if what was being done locally was first, effectively focused on national figures, and more importantly, focused on the local problem.

PROCEDURES

The Research began on the Campus of the National Emergency Training Center in Emmitsburg, MD. The researcher reviewed several other research documents that dealt with residential home inspections contained in the Learning Resource Center located there. Additionally, The researcher examined the centers extensive library of journals dating from 1999 – 2004 for articles relating to residential property inspection.

Research was also conducted in the Niles Fire Department's Library located at 1345 East Main Street. The Department has an extensive amount of fire service related literature. Several other publications were purchased by the researcher, based on their contemporary and specific insight into this problem. Finally, the researcher was able to access the Western Michigan University's online library, to locate additional published papers ranging from risk reduction to injury statistics.

A search of the Internet revealed information relating to strategies other communities used to attack these same issues. Many municipal web sites were studied. The researcher looked at what strategies were being used to perform inspections including model codes, type of department inspecting, fee structure, and completeness of inspections.

The researcher examined fire incident reports published by the Niles Fire Department in three non-concurrent years. The first year reviewed was 1983. The Fire Marshal had not started inspecting rental property in 1983. The second year examined was 1988. Though the Fire Marshal had been inspecting rental property for several years, he was doing so without the additional support of duty personnel. Finally, 2003 was included as the last full year that records are available.

Structure fire responses were compiled and the reported fire cause was extracted. This list was compared with the national statistics gained in the literature review. The researcher also attempted to determine if the fire building was a rental property or owner occupied. To do this the researcher focused on the reported name of the occupant and the owner. If the reporting official

included one name or the same name in either of the two boxes, the researcher inferred that the structure was owner occupied. If two different names were listed by the reporting official the researcher inferred that the building was a rental property.

The research enlisted the assistance of the Niles City Building Department, located at 508 East Main Street in Niles, to gain access to every 2003 rental inspection report generated by inspection personnel. In all, 580 rental reports were examined. These reports were examined to determine what issues the inspectors cited and how frequently. The results were also noted in excel by the type of violation and its corresponding number. The researched hoped to learn if the issues cited related to national statistic of fire causation in residential occupancies.

The researcher learned during the literature review about increased numbers of fires in neighborhoods with lower than average mean incomes. To determine areas of lower than average income levels the researcher talked with the Niles Planning Department, located at 508 East Main Street in Niles. The researcher also plotted every structure fire response from 2001 – 2004 on a City map to determine if any location suffered an increased number of fire responses.

The researcher, in an attempt to determine additional benefits that may be gained through conducting a program of this type, surveyed City of Niles Rental Dwelling Inspectors. The survey queried each inspector who conducted rental inspections in 2003. In all, seven inspectors were asked a total of five questions relating to the performance of this task. The survey contained simple yes or no questions, as well as fill in the blank. The inspectors were asked to fill out the

survey independently and return it as soon as complete. All issued surveys issued were completed and returned.

It is very difficult to attach credit for limiting fire occurrence to any one individual program or issue. Modern appliances, local public education programs and national media campaigns all play a part in the gradual reduction of the fire problem. Modern appliances, fabrics, and building designs are also limiting fire occurrences. This project is limited in that any reduction found in fire occurrence must be shared among these other items.

Fire reports are only as good as the information entered by the reporting official. In taking data from these reports, limitations exist in its accuracy as different reporting policies may have existed in the three separate years surveyed. Vigilance has increased over time as well as the quality of the program used to produce the data. In 1983 reports were typed with a manual typewriter. Today reports are entered with a report system that reminds personnel of required fields needed to proceed.

RESULTS

An investigation at the Niles building department revealed that the City is made up of over 5000 Residential occupancies with 2000 being registered rental property. A visit to the Niles Planning department also revealed that the neighborhood on the northeast side of the city has a lower socio-economic makeup and a more rental property.

A survey of municipal web sites was conducted to gather information of various rental property inspection programs. The researcher found that many of the cities surveyed were using civilian housing inspectors to carry out rental

property inspections. One jurisdiction was turning the inspections over to certified private contractors. Landlords were required to arrange for the inspection and present a certificate of inspection at the time of their registration.

Of the municipalities found to be conducting rental property inspections, time between inspections varied. In Niles, inspectors attempt to inspect rental property on average of two years. The research found times ranging from annually to seven-year rotations. One agency based the re-inspection time on past inspection performance. Those occupancies that had little or know corrective orders issued over time enjoyed longer time between inspections. Self-inspections were even being utilized by other agencies in off inspection years.

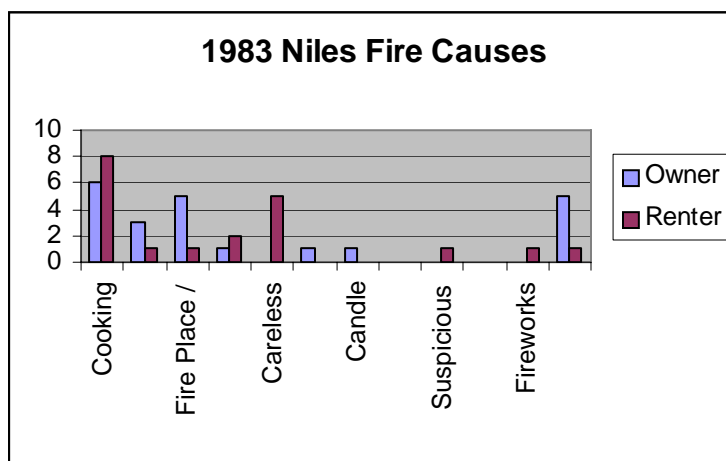
Many of the areas inspected ranged as well. The minorities were found to only explore the common areas and the exterior of the structure. Some would select a few units at random. Finally, most surveyed as well as the Niles inspections, covered every aspect of the home. Some jurisdictions even require an additional electrical inspection prior to registering.

The researcher examined NFD fire incident reports from 1983. A total of 50 incidents were reported as structure fires. Of the 50 fire reports generated in 1983, 22 occurred in owner occupied structures or reports listing only one person in the occupant and the owner categories. Twenty reports were found to have occurred in rental property or reports listing the occupant and the owner as two separate people. The remaining eight reports included four vacant properties and four that were commercial in origin.

These 1983 documents were also studied for the cause listed in each report. Cooking related incidents were found as the leading cause in both the rental and owner occupied categories, with eight occurrences in rental dwellings and six occurrences in owner occupied homes. These numbers show cooking related incidents causing 27 percent of fires occurring in owner occupied homes and a staggering 40 percent of all incidents occurring in rental property that year.

Other causes included match play, which accounted for three occurrences in owner occupied structures and only one in rental property. This amounted to 9.5 percent of all residential calls in 1983. Smoking related incidents only occurred in rental properties that year, with a total of five occurrences. This figure amounted to 11.9 percent of the occurrences in residential property, but more specifically, 25 percent when you consider rental property alone.

Figure 1

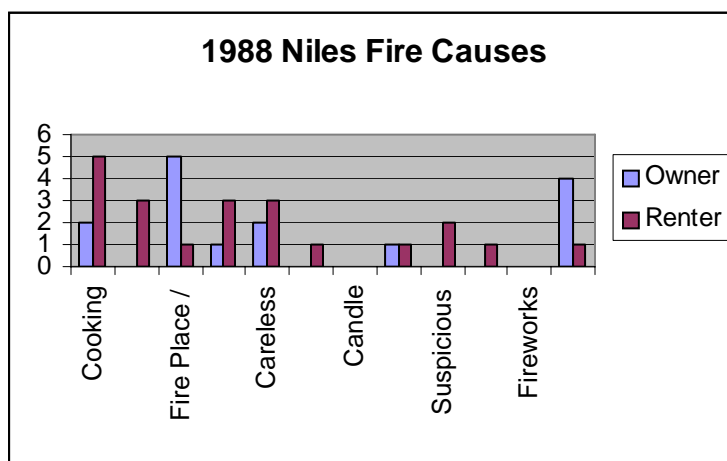


Fireplace related causes were contributed to five incidents in owner occupied homes and only one in rental property that year. This accounted for

14 percent of all residential fires. Electrical incidents accounted for three fires or 7 percent of all residential occurrences in the year. Finally, candles, fireworks dryers and arson all contributed one response each. Six reports were also listed as unknown in nature.

In 1988, 45 fires were reported for a total reduction of five fires from 1983. Twenty-one of these fires were associated with rental property with 15 of which occurring in owner occupied units. Cooking related causes remained high in rental property with five occurrences, however owner occupied dwellings saw a reduction to only two occurrences for the year. Though down 16.2 percent from the 1983 numbers, this cause still amounted to 23.8 percent of all rental unit fires and 19.4 percent of all residential fires.

Figure 2

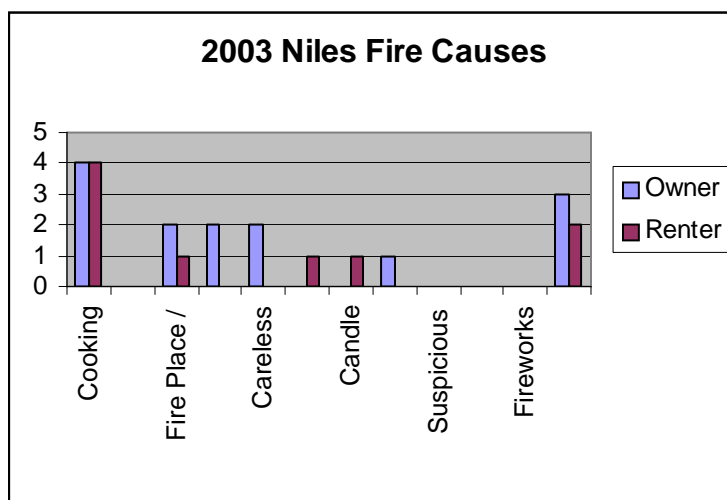


Rental fires also saw three occurrences each of electrical, smoking and match play causes. This amounts to 14.2 percent for each cause. Owner occupied structures also contributed a single occurrence of electrical and two

occurrences for smoking. No reports of match play were reported in owner occupied structures in 1988. One occurrence each was blamed on excessive accumulation and dryer related causes, with two reports of furnace issues. Unknown was reported on five of the remaining reports in this year.

Finally, in 2003, fire crews reported 27 total fires. Owner occupied structures were listed on 14 fires with only 9 fires occurring in rental properties. Reports also showed that two buildings were listed as vacant and two described as commercial. This amounted to a reduction of total fires from 1983 to 2003 of twenty-three occurrences or a 46 percent reduction. Though the occurrences in owner occupied structures saw very little reduction over the same term, rental property fire occurrences showed a staggering 55 percent drop in fires.

Figure 3



Cooking again led the way in 2003 with owner occupancies and rentals logging four occurrences each. These eight occurrences amount to 34 percent of all residential fires and 44 percent of rental property incidents. Three reports

were blamed on fireplace related incidents, two in owner occupied structures and one in rental property. Owner occupancies also had two occurrences of electrical and smoking related causes, with one listing for a furnace issue. Rental properties received one occurrence with a dryer and another resulting from a candle.

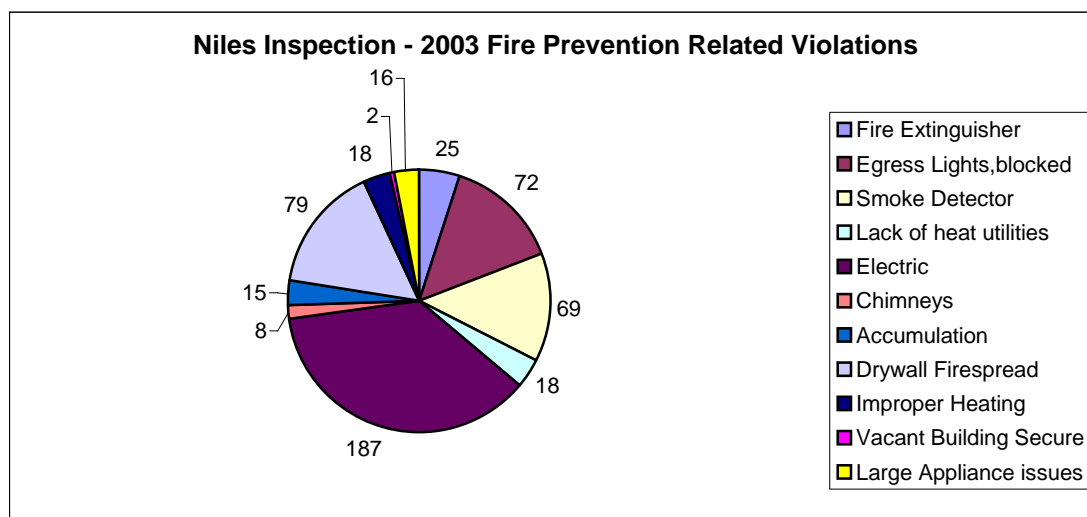
Two civilian fire deaths were experienced in 1983. Both victims died in fires that were attributed to careless smoking. Each of these fires occurred in rental property. No fire deaths were reported in either of the remaining two years surveyed.

The researcher took each fire occurrence ranging from 2001 to 2004. Of the 88 structure fires were reported, 43 were in owner occupied dwellings with 34 in registered rental property. Seven of these fires came in commercial, three were associated with industrial occupancies, and one was in a church. These fires were also plotted on a map relating to their address location. (See Appendix A) Only 76 fires were reported on the east side of Niles as determined by the St. Joseph River with 12 fires reported on the west side of Niles. The researcher then divided the city's east side using a line to the east beginning at the Main Street Bridge and continuing east to the city line. This showed 27 fires on the south side and 49 occurrences on the north side of town.

The researcher studied copies from each rental inspection performed in 2003. In all 580-rental inspection forms were examined. Of these, seven different inspectors noted 509 individual violations associated to fire causes. These causes were separated by type of violation into a total of 11 different categories.

In all citing of electrical related items led the way in 2003 with 187 violations. Next on the list were drywall issues, which could lead to excessive fire spread with 79 violations. Egress concerns and smoke detectors also scored high with 72 and 69 violations respectively. Lower categories included lack of heat or utilities with 18 occurrences, fire extinguishers concerns which accounted for 25 violations, improper heating posted 18 violations, and large appliances, like dryers and stoves, resulted in 16 orders being issued. Securing of vacant buildings was only written on 2 reports and chimney problems were only reported 8 times.

Figure 4



7 different inspectors issued the 509 citations. National Fire Protection Association, Fire Inspector 1 certification is held by 3 of the seven, with the remaining four inspectors only having received basic fire inspection training in house. The 3 training inspectors issued a total of 391 violations, or 76 percent of the total violations issued. This number is somewhat misleading as the Fire

Marshal who works daily, and the Chief, who only performs inspection work sporadically, are both listed with the deputy code enforcement officers who work shift work, and only perform inspections for a portion of each shift. When two inspectors who performed inspections throughout 2003, one trained and the other untrained are compared, the trained individual issued 199 separate violations relating to fire prevention while the untrained man produced only 22.

A survey was conducted with all 2003 inspectors. The first question asked the inspector if all violations were discussed with the occupants of the structure. All seven inspectors answered yes to this question. Question two asked if safety messages were discussed with the occupant. All seven again answered yes.

In an attempt to closer gauge if these inspectors were effectively focusing on those fire problems most evident in Niles the researcher asked the inspectors to fill in five examples of the type of safety information they had discussed. Every inspector surveyed listed smoke detector placement or maintenance in his or her blanks. Inspectors also included E.D.I.T.H. or Exit Drill strategies used in the Home, electric cord and plug strip usage dangers, proper housekeeping, with specific mention of stove tops and egress considerations, and window operation. Information about furnace maintenance and the importance of keeping mechanicals clear of accumulations, as well as dryer lint removal was specifically listed. Even burn prevention, ranging from panhandle positioning and other stove safety to water heater relief valve pipe installation was also noted. Finally, one inspector even reported talking to children about Stop, Drop, and Roll and another touched on fire extinguisher usage.

The third question asked if each inspector felt that the program limited the occurrences of fire in Niles. All inspectors answered yes to this question as well. The last question was also a unanimous yes result. It asked inspectors if they felt that their involvement in the program was helpful in their suppression role.

DISCUSSION

There seems to be no argument. In all of the material researched, residential occupancies are the type structure where the fire service is losing its battle. Harry Carter cites residential property as the area where the highest loss of life is located, but offers only voluntary inspection programs as solutions to attack this problem. Cote talks about these properties producing a “Disproportionate” number of deaths but admits that many codes stop short of code compliance in one and two family dwellings. Unknown to many fire service leaders, building, housing, or other related departments might be routinely inspecting these dwellings, in their own municipalities. Though positive, many of these inspectors lack the passion and urgency that can be gained by inspecting these properties with uniformed personnel.

Lt. Martin, in his now decade old research, points out the benefits of residential inspections. Though his program was voluntary the facts remain that firefighters walking through places where people live, make the dwelling safer. Not only by ordering damaged electrical systems repaired or drywall re-installed, they can also implant many safety concepts for situations that may not surface for weeks, months, or years. By convincing an elderly gentleman to have a lid for his frying pan within arms reach, fires that are not effectively controlled by the codes alone will be prevented.

DiGuseppi, Edwards, Godward, Roberts, and Wade pointed out that tobacco and its careless use led the way in causing fires leading to death. They also went on in their article for the Academy of Pediatrics article that children's use of matches and lighters was a leading cause of accidental childhood death. Neither of these two causes can be effectively prevented by simple code compliance inspections unless the area being inspected has totally banned lighters and cigarettes in homes.

Educating shift personnel in code language and inspection etiquette is not enough. The research revealed that cooking related fires led the list of causes from Detroit to Dallas. It would be wrong to assume that inspectors armed with the most recent model code could prevent more than a few of these occurrences. This is because in most cases it is not the stove that malfunctions, but the methods the chef employs that are at fault. Baum seems to echo this thought in the NFPA Journal Article entitled Formula for success. There he stated, "Even the most ambitious fire and life safety inspection program can't prevent all fires." The only possible way to prevent this type of occurrence is to attempt use the time that you have with the occupant to impart safety messages that may help to change behavior or be called to mind later during a traumatic incident.

Farr and Sawyer recommend regular training to assure that inspectors understand both the code and local policy. Though Niles has conducted some quality training, sending select inspectors to NFPA Inspector 1 class, several other have little or no training relating to home inspections. This lack of training can lead to a false sense of security for the tenant and a liability nightmare for the

municipality. This training should include prevention-based knowledge, giving the employee the confidence to deliver the information.

Rental inspections can come in many forms. City's like Cedar Rapids conduct inspections every seven years, while Boulder prefers four-year increments, and Kansas City only comes when a complaint is filed. It is obvious, the more often that an inspector can tour a structure the better the chance that an issue will be resolved prior to injury or property loss. The Niles policy of inspecting properties every other year, though better, still means that damage could go unchecked for years and tenants could change in between inspections. A better approach was found in Fargo, where problem properties are inspected more frequently than those found to be in good shape.

Municipalities that are using housing inspector to survey rental property are less likely to receive the intrinsic benefits received by those using firefighters. Lets face it people trust firefighters to keep their families safe. In Hachem's column, she quoted the Chief of Pontiac who stated that his department could do a better job inspecting the dwellings. One of the reasons may have been the fact that fire service personnel have to drag the occupants out when we don't. Harry Carter even points out that the use of firefighters to conduct inspections adds to their ability to perform their suppression role through better knowledge of buildings in their area. The fact that ever Niles inspector surveyed felt that inspections positively affected their suppression role is a perfect example of this fact. Farr and Corbett even go as far to say the use of non-fire personnel without the experience of a firefighting background can lead to difficulty in that inspector truly understanding the real purpose of the fire and life safety codes purpose.

Bull and Cote each present hard numbers relating to what causes structure fires in the U.S. The research conducted on fires in Niles seemed to shadow these national statistics with cooking and careless use of smoking material leading to the ignition of most fires here. It is also obvious that the limited amount of fire data in which to examine points to the system effectiveness. With the numbers of fires occurring in Niles cut in half in twenty years some could deduct that the program is working. The lower average of fires occurring in rental property than owner occupied dwellings would also seem to point to success. I think the most important information found was the fact that every inspector felt that the program was working.

The research also pointed out many variations and considered to be accepted national practices used by other agencies to attempt to curb this problem. Use of model codes, complete and thorough inspections, coupled with accepted national certification, has already begun in Niles. Though the Niles program does appear to be effectively helping to control the problem, fires still occur, suggesting work still needs to be done. Additional inspections for problem properties and required electrical inspections should be incorporated.

It would appear that Niles inspectors are advising occupants of the problems that may lead to fire occurrence in their home. The research or 2003 Rental Inspection Forms showed that inspectors are citing in quantity, several of the fire causes listed in national statistics. Over 500 potential hazards including electrical hazards, smoke detector power and placement, and egress concerns were corrected as a result of the inspections. Of the fires reported, the majority

seem to originate from fire causes not controlled through normal enforcement means.

The research seemed to suggest that, though code enforcement should continue, additional training and effort should be placed on inspector's ability to provide education during the inspection. Enforcement is needed to make sure drywall is repaired to limit fire spread, electrical causes are spotted and corrected, and egress paths are open and components operational, but it doesn't seem to control the leading causes of fire. The researcher found that the leading fire cause occurred while cooking or smoking. These type fires can only be prevented through education.

Many additional benefits exist as a result of the program. First, Carter points out that the use of fire personnel shows effective use of personnel as well as competent management" (Carter, 2004, p. 120). This positive perception has lead to a better relationship with city management, quicker and more beneficial contract negotiations, and better equipment.

Additional benefits relate to firefighter competency. First, firefighters who conduct inspections have a better understanding of building construction and components which can help them better determine flame spread and structure integrity at fire scenes. Next, in many cases this includes the intimate knowledge of the interior layout of specific structures previously visited by inspectors. Finally, neighborhood knowledge is improved which can allow firefighter a better knowledge of response routes, power line and hydrant locations, and even specific residents of the community.

One problem with the program is that it is only accessing 40 percent of the homes. The other 60 percent must be of Niles homes are occupied by their owners, thus illuminating them from the mandatory inspection program. Since home owners in Niles generally are at higher income levels than their neighbors who rent, and considering the report by Istre, McCoy, Carlin, McClain that pointed out the socio-economic relationship to fire occurrence in Dallas, one could infer that the most at risk one and two family homes are currently being inspected in Niles.

RECOMMENDATIONS

The researcher was able to gain a large amount of information about various inspection program concepts from the various municipal web pages. Though the City of Niles has a web site that is updated regularly, little information about the specific requirements relating to rental inspections have ever been included. Only recently the city included the entire codified Code of the City of Niles on its web page. Though a positive step, many residents will not take the time to go through the many pages of text included in the code. It would be recommended that the Fire Prevention Bureau develop and distribute an informational section that highlights the main requirements relating to the rental inspection program and property maintenance requirements as well.

After studying the fire occurrences in both the city of Niles and the national statistics, it was clear that even the best inspection couldn't totally stop all fires. For example a kitchen fire can occur on a properly installed stove if the resident uses improper techniques. The researcher would like to utilize the on one access afforded by the rental inspection program to distribute public education

materials relating to the most common fire causes. Additionally, inspectors should be taught to include safety education presentation into each inspection. Department policy should be developed to require this educational approach.

The department should continue to train each member to the NFPA' fire inspector 1 Level. Addition training and education should also be offered inspectors to assure that they are all inspecting each property similarly and effectively. Education should include statistical data relating to what causes fires and where these conditions commonly exist in the home. Information stressing the importance of correct smoking behavior, including keeping ignition sources out of the hands of small children, dangers of smoking in a comfortable chair or bed, and proper discarding of materials after use, should also be presented. Additionally, education should give inspectors understanding the benefits and availability of construction techniques and materials that can limit the spread or control the fire after it has ignited. Included are residential hood suppression equipment, drywall and fire blocking, and sprinkler systems.

REFERENCES

- Baum, K., (2002). Formula for success {Electronic version}. *NFPA Journal*, 96, (6), 66-69
- Bull, M.J., Agran, P., Laraque, D., Pollack, S.H., Smith, G.A., Spivak, H.R., et al. (2000). American Academy of Pediatrics: Reducing the number of deaths and injuries from residential fires. *Pediatrics*, 105 (6), 1355 – 1357.
- Boulder (Co) City Web Site 2004, (2004 August), Applying for a rental housing License. Retrieved September 23, 2004 from <http://www.ci.boulder.co.us/buildingservices>
- Bradley, H.L., (2003). One-and two-family dwellings. In Cote, A.E. (Ed) *Fire Protection Handbook* (19th Ed., pp. 13-129 – 13-133). Quincy, MS, National Fire Protection Association.
- Carter, H.R., & Rausch, E. (2004) *Managment in the fire service* (3rd. ed.). Quincy, MS: National Fire Protection Association.
- Cedar Rapids (Iw) City Web Site 2004 (n.d.). Housing Services. Retrieved from <http://www.cedar-rapids.org/housing/inspectionfees.asp>
- Corbett, G.P., & Farr, R. R. (2003) Fire prevention and code enforcement organization. In Coleman, R.J., [et al] *The fire chief's handbook* (6th ed. pp. 1037-1061). Tulsa, OK: PennWell.
- Cote, A.E., (2004) *Fundamentals of fire protection*. Quincy, Massachusetts: National Fire Protection Association.
- DiGuseppi, C., Edwards, P., Godward, C, Roberts, I., & Wade, A. (2000). Urban residential fire and flame injuries: a population based study. *Injury Prevention* 2000, 6, 250 – 254.
- Fargo (Nd) City Web Site 2004, (2004, September 13). Rental Housing Inspections. Retrieved September 23, 2004 from <http://www.cityoffargo.com/Inspections/Housing.htm>
- Farr, R.R., & Sawyer, S.F., (2003). Fire prevention and code enforcement. In Cote, A.E. (Ed) *Fire Protection Handbook* (19th Ed., pp. 7-211 – 7-218). Quincy, MS, National Fire Protection Association.
- Hachem, K.E., (2004, August 27). Rental unit owners sue Ypsilanti over inspections. *Ann Arbor News*. Retrieved September 23, 2004 from <http://www.mlive.com/news/aanews/index.ssf?/base/news-2/109361...>
- International Fire Service Training Association (1998) *Fire inspection and code*

enforcement (6th ed.) Oklahoma State University: Stillwater, OK.

Istre, G.R., McCoy, M., Carlin, D.K., McClain, J., (2002) Residential fire related deaths and injuries among children: fireplay, smoke alarms, and prevention. *Injury Prevention* 2002, 8, 128 – 132.

Kalamazoo (Mi) City web Site 2004, (n.d.). Rental housing inspection & certification program. Retrieved October 13, 2004, from http://www.kalamazoocity.org/governmental/departments/cp_housing.php

Low, M., & Witsil, F. (2003, August 1st). Fire prompts inspection sweep of Pontiac, Mich., Rental Properties. *Knight – Ridder / Tribune Business News*. Retrieved October 12, 2004, from <http://web6.infotrac.galagroup.com.libproxy.library.wmich.edu/itw/infomark/562/395/54295061w6/purl...>

Martin, D.D., (1990, August). Are residential fire inspections worthwhile? (Applied Research Project). Emmitsburg, MD: National Fire Academy, Executive Fire Officer Program.

National Commission on Fire Prevention and Control. (1973). *America Burning* (-495-792). Washington, DC: U.S. Governmental Printing Office.

National Fire Protection Association. (1994), *Nfpa inspection manual* (7th ed.), Quincy, Massachusetts: National Fire Protection Association.

National Fire Protection Association (2000). *NFPA standard 1201:developing fire protection services for the public*. Quincy, MA: Author.

National Fire Protection Association (2003). *NFPA Standard 1031: professional qualifications for fire inspector and plan examiner*.

Mumford, L., (1998, November 6). Fort St. Joseph believed located. *South Bend Tribune*. Retrieved October 26, 2004, from www.miarch.org/fort/tribune.html

Moremond, M (1995, March). A study of remedies for chronic problem properties. Retrieved September 23, 2004, from <http://www.ci.stpaul.mn.us/council/chronicproperties.html>

Salcetti, M., (2001, September 5). Rental inspections complaint-driven elsewhere. *Garden City Telegram*. Retrieved September 23, 2004, from <http://www.getelegram.com/news/2001/September/1/housing3.html>

United States Census. (2000). Profile of demographic information: Niles, MI. Retrieved December 21, 2002 from <http://www.swmicomm.org/SWMC/Berrien/pdf/57760.pdf>

United States Fire Administration, Federal Emergency Management Agency
(2002). A needs assessment of the U.S. fire service. (FA-240 / December
2002) Washington, DC: U.S. Government Printing Office.

United States Fire Administration, Federal Emergency Management Agency
(2002). Fire in the united states 1989 –1998. (Twelfth Edition) (FA-216 /
August 2001) Washington, DC: U.S. Governmental Printing Office.

United States Fire Administration. (2003). Leading community risk reduction.
National Fire Academy, Emmitsburg, MD.

Appendix A

Niles Fire Department

Inspector Survey

(Please Circle one answer)

1. While performing a rental inspection do you discuss all violations with the occupant or owner?

Yes

No

2. Do you present safety messages to the occupant during the inspection?

Yes

No

(Please list 5 general safety concepts you have used.)

1

2

3

4

5

3. Do you feel that the inspections that you conduct limit the occurrences of fire in our community?

Yes

No

4. Do you feel the performance of rental inspections help you in your suppression role?

Yes

No